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Emotion Dysregulation and Interpersonal Problems: The Role of Defensiveness

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Highlights

- Defensiveness is negatively related to emotion dysregulation (ED)
- Defensiveness is negatively related to interpersonal problems, including aggression
- Defensiveness explains the relation between ED and interpersonal ambivalence
- Defensiveness explains the relation between ED and aggression

Abstract

Despite evidence that individual differences in defensiveness (typically measured with social desirability scales) may affect associations among self-report measures, little is known about the impact of defensiveness in the well-established relations between self-report emotion dysregulation and interpersonal problems. In Study 1 (community sample; $N = 274$), we found evidence that defensiveness significantly explained a portion of the shared variance between emotion dysregulation and interpersonal problems in the externalizing domain (i.e., interpersonal ambivalence, and aggression) but not in the internalizing domain. In Study 2, we replicated and extended these findings by showing that defensiveness accounted for a positive indirect effect of emotion dysregulation on aggression in a sample of incarcerated offenders ($N = 268$). These findings are consistent with an increasing amount of research corroborating that defensiveness reflects meaningful variance – rather than a statistical nuisance – in relationships between self-reported ratings of emotion dysregulation, interpersonal problems and aggression. In both samples, reports of lower levels of emotion dysregulation were associated with higher levels of defensiveness. In turn, individuals with higher levels of defensiveness were more likely to report lower levels of interpersonal ambivalence and aggression. Therefore, defensiveness may play an important role in the mechanisms linking emotion dysregulation and associated negative consequences.

Keywords: Emotion regulation, defensiveness, interpersonal ambivalence, aggression, offenders, social desirability, self-report

1. Introduction

Recent research has provided substantial evidence that difficulties in emotion regulation are related to several forms of psychopathology and other interpersonal difficulties (Gross & John, 2003; Kring & Sloan, 2009; Tamir, 2015). Because the study of emotion regulation has often relied largely on self-report measures, some limitations of self-report measures raise questions. One important construct that appears relevant to self-report measures of emotional functioning is defensiveness (i.e., the individual tendency to perceive and report primarily favorable attributes about oneself – as opposed to unfavorable ones; Lane, Merikangas, Schwartz, Huang, & Prusoff, 1990). Therefore, defensiveness may reflect distortion or avoidance of thoughts, feelings, and behavioral tendencies associated with a risk of social rejection or with a negative evaluation of the self (Uziel, 2010). Prior studies provide preliminary evidence that individual differences in defensiveness account for some of the shared variance between indices of emotion regulation and criteria related to psychosocial functioning. However, only one prior study has employed modern statistical methods to address whether defensiveness truly accounts for indirect relationships between emotion regulation and an index of psychological functioning, sometimes described as atemporal mediation (Winer et al., 2016). Therefore, the current study was conducted to provide a direct test of whether defensiveness can account for an indirect relationship between self-reported emotion regulation and interpersonal functioning in two independent samples.

Emotion regulation refers to the extrinsic and intrinsic processes responsible for the monitoring, evaluating, and modification of emotional experience and expression (Thompson, 1994), as well as to the ability to modulate behavior when experiencing intense emotional arousal (Gratz & Roemer, 2004). Some researchers have also identified awareness of emotion as a component of emotion regulation (Gratz & Roemer, 2004; Thompson &

Calkins, 1996; Saarni, 1999), that is, a tendency to pay attention to and acknowledge emotional responses, even if upsetting (e.g., fear, sadness, or anger).

Regardless of different conceptualizations, the study of emotion regulation is relevant for understanding adaptive and maladaptive functioning (Kring & Sloan, 2009; Kim, Ford, Mauss, & Tamir, 2015). There is substantial evidence that good emotion regulation skills are associated with psychological well-being (Balzarotti, Biassoni, Villani, Prunas, & Velotti, 2016) and good interpersonal functioning (Gross & John, 2003; Tamir, 2015). Conversely, emotion dysregulation has been linked with a variety of interpersonal problems (Coats, & Blanchard-Fields, 2008; Herr, Rosenthal, Geiger, & Erikson, 2013). For instance, the use of maladaptive emotion regulation strategies like emotional suppression is associated with reduced sociability, as indexed by lower scores on indices of openness, agreeableness and extraversion (Gross & John, 2003). Further, emotion dysregulation has been associated with heightened interpersonal sensitivity and ambivalence (Besharat, 2013; Dixon-Gordon, Gratz, Breetz, & Tull, 2013), as well as with aggression and violent behavior (Donahue, Goranson, McClure, & Van Male, 2014; Garofalo, Holden, Zeigler-Hill, & Velotti, 2016; Roberton, Daffern, & Buck, 2015; Velotti, Casselman, Garofalo, & McKenzie, 2017).

The growing number of studies on emotion dysregulation in recent years has been partly facilitated by the development of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), which allows assessment of perceived emotion regulation problems across multiple domains. In the DERS framework, emotion regulation is conceptualized as a multidimensional construct involving: the awareness, understanding, and acceptance of emotions; the ability to control behavior and pursue desired goals under negative emotional arousal; and the ability to employ effective emotion regulation strategies (Gratz & Roemer, 2004). Impairments in any of these domains are considered indicative of emotion dysregulation. In the last decade, ample evidence has accumulated corroborating the validity

of the DERS as a self-report index of emotion dysregulation, and its use has advanced our understanding of the relations between emotion dysregulation and a variety of psychological and interpersonal problems (John & Eng, 2014).

The growth in research on emotion regulation has relied largely on self-report measures of emotion regulation ability and strategies (John & Eng, 2014). However, self-report indices of affective and cognitive functioning are characterized by limitations, and indices of emotion regulation are no exception. Scores on self-report measures of emotion regulation may be influenced by individual differences, such as those related to poor reading ability, memory/recall bias, a lack of reflectivity, and willful deception (Tull, Bornovalova, Patterson, Hopko, & Lejeuz, 2008). Some of the limitations of self-report measures reflect their dependence on self-knowledge (Vazire & Carlson, 2010). In particular, the empirical literature consistently links individual differences in defensiveness to scores on a wide variety of self-report measures. As the construct of defensiveness is typically employed today, it is conceptualized as an individual differences dimension related to the tendency to fail to perceive and fail to report unfavorable attributes, and instead to perceive and report primarily favorable attributes about oneself (Lane et al., 1990). Therefore, defensiveness may reflect distortion or avoidance of thoughts, feelings, and behavioral tendencies associated with a risk of social rejection or with a negative evaluation of the self (Uziel, 2010).

Although the construct of defensiveness was first studied to identify individuals exhibiting response bias on self-report measures of personality (using measures of social desirability; e.g., Crowne & Marlowe, 1960), there is substantial evidence that defensiveness represents a meaningful dimension of personality rather than a response bias that limits the utility of self-report measures (Chung, 2012; Connelly & Chang, 2016; Kurtz, Tarquini, & Iobst, 2008; McCrae & Costa, 1983; Uziel, 2010). For instance, it has been reported that socially desirable responding does not vary across administration conditions that differ in

anonymity (e.g., paper-and-pencil *versus* internet surveys), as would be expected of a simple measure of response bias (Dodou & de Winter, 2014). Along the same lines, levels of agreement between self- and informant-report measures of personality and psychopathology are not related to scores on social desirability scales (Kurtz et al., 2008; McCrae & Costa, 1983), indicating that the accuracy of self-reports is not influenced by individual differences in defensiveness. Thus, accumulating evidence seems to provide support for considering defensiveness a personality trait rather than merely a bias in self ratings of individual characteristics. However, different perspectives have been advanced regarding the nature of defensiveness as an individual differences construct, with several authors arguing that defensiveness captures a tendency to avoid acknowledging problems (i.e., weak self-knowledge), whereas others suggest that higher levels of defensiveness reflect greater levels of self-control and psychological health.

On the one hand, several studies have reported evidence that higher levels of defensiveness are associated with poorer health outcomes. For example, defensiveness has been linked to heightened blood pressure reactivity and poorer parasympathetic function (Movius & Allen, 2005, Nyklicek, Vingerhoets, Van Heck, & Van Limpt, 1998). In one study, defensiveness predicted a seven-fold increase in hypertension over a three-year period (Rutledge, Linden, & Davies, 2000). Although not all authors have replicated these relationships (e.g., Feldman, Lehrer, Hochron, & Schwartz, 2002; Blackhart, Eckel, & Tice, 2007), these findings seem to suggest that the negative relation between defensiveness and self-reported problems may reflect a lack of awareness of such problems, as evidenced by positive relations between defensiveness and objective indices of maladjustment.

On the other hand, several other studies emphasize that the negative correlations between levels of defensiveness and indices of personality and psychopathology are not limited to self-report measures. For example, Kurtz et al. (2008) reported positive

correlations between defensiveness scores and self-report, peer-report, and parent report of extraversion, conscientiousness, and agreeableness. Furthermore, Lane et al. (1990) reported a negative association between self-reported defensiveness and lifetime clinician ratings of psychiatric disorders. Accordingly, Widiger and Oltmanns (2016) have argued that scores on social desirability scales may reflect true individual differences in adaptive (as opposed to maladaptive) attributes. Uziel (2010) made the similar argument that higher scores on many social desirability scales which measure conscious deception may reflect high levels of self-control in the service of achieving social goals. In short, higher levels of defensiveness may contribute to lower scores on measures of psychological and interpersonal problems through either limited awareness of such problems or through a tendency to follow (rather than disregard) social conventions in the service of positive social and personal adjustment (Diener, Sandvik, Pavot, & Gallagher, 1991; Kurtz et al., 2008; Uziel, 2010; Widiger & Oltmanns, 2016).

Notwithstanding these different interpretations about the nature of defensiveness, in recent years the interest in its role has been expanded to include not only bivariate relations with self-report measures, but also investigations of its role in the associations between different measures. One way to investigate the competing possibilities about the role of defensiveness in associations between self-report measures is to examine whether the inclusion of defensiveness in a regression model changes the direct relation between an independent and a dependent variable. When the measures are collected at the same point in time, there is no way to establish a causal or even temporal sequence. In such cases, evidence that one index accounts for the shared variance between an independent and dependent variable is sometimes labeled atemporal mediation (Winer et al., 2016). If the inclusion of defensiveness weakens the association between two variables that are conceptually related, this outcome suggests that defensiveness accounts for substantive variance in the association

examined (MacKinnon, Krull, & Lockwood, 2000). In such cases, that is, if defensiveness accounts for substantive variance shared between an independent variable (e.g., individual differences in the ability to regulate emotion) and a dependent variable (e.g., individual differences in awareness of a personal asset or impairment), it may be considered an atemporal mediator.¹

Despite an increasing recognition of the importance of individual differences in emotion regulation, few studies have investigated links between defensiveness and scores on self-report measures of emotion regulation, and very few studies have examined the role of defensiveness in the associations between emotion dysregulation and its external correlates (Arndt & Fujiwara, 2014). One such study reported a relationship between self-reported emotional intelligence and defensiveness, which could not be explained by individual differences in self-aggrandizing distortions (Mesmer-Magnus, Viswesvaran, Deshpande, & Joseph, 2006), suggesting the possibility that defensiveness is related to emotion regulation. Similarly, although associations between emotion dysregulation and interpersonal problems are well established, no studies to date have directly examined the impact of defensiveness on relationships between emotion regulation and interpersonal problems. To our knowledge, only one study has addressed a closely related question – examining the mediating role of defensiveness in the relation between emotion regulation and anxiety. Arndt, Hoglund, and Fujiwara (2013) provided evidence for an indirect effect of two emotion regulation strategies (i.e., reappraisal and suppression) on levels of trait anxiety through two forms of social

¹ MacKinnon et al. (2000) have shown that mediation and confounding are statistically identical and can be distinguished only on conceptual grounds. When indices of social desirability/defensiveness were first introduced as measures of response bias, it was suggested that an unwillingness to admit weaknesses on self-report tests was a possible confound in personality research. However, in light of the relatively consistent correlations between defensiveness scores and indices of personality, researchers have increasingly argued that defensiveness provides a measure of substantive trait variance rather than a measure of response style (Uziel, 2010; Widiger & Oltmanns, 2016). Therefore, in the presence of an effect compatible with both mediation and confounding, it may be argued that defensiveness is conceptually consistent with a mediation effect. **MacKinnon et al. (2000) also identified cases in which the inclusion of a third variable is associated with the strengthening of a relationship between a predictor and a criterion variable as cases of statistical suppression. We did not obtain evidence of statistical suppression in this study.**

desirability (i.e., impression management and self-deceptive enhancement). Considering the cross-sectional design of the Arndt et al.'s (2013) study, this effect can be described as a case of atemporal mediation (Winer et al., 2016). That is, both self-deception and impression management accounted for a significant proportion of the shared variance between self-reported emotion regulation and anxiety. Even so, Arndt et al. (2013) only examined one form of psychosocial difficulty (anxiety) and two specific emotion regulation strategies. Therefore, the possible impact of defensiveness on relationships between the broader construct of emotion dysregulation and other kinds of difficulties has not yet been examined. In addition, because the participants were undergraduate psychology students, the generalizability of the findings to community participants or to samples that are likely to show greater levels of emotion dysregulation and interpersonal difficulties (e.g., clinical or forensic samples) is uncertain.

Therefore, the current research was designed to examine – across two studies – both the possibility of direct relationships between emotion regulation and defensiveness and the possibility of indirect relationships between emotion dysregulation and interpersonal problems through defensiveness. First, we expected that defensiveness was negatively related to both emotion dysregulation and interpersonal problems. Then, we investigated whether variance in defensiveness partly accounted for relationships between DERS-assessed emotion dysregulation and reports of interpersonal problems. Conceptually, evidence that individual differences in defensiveness explained the relation between emotion dysregulation and interpersonal problem would be consistent with the perspective that defensiveness captures substantive variance in personality traits. Furthermore, because mediation analyses with cross-sectional data do not come without limitations for interpreting mediation results, we also tested alternative models to probe the mechanisms linking emotion dysregulation, defensiveness, and interpersonal problems. Specifically, we tested reversed mediation models

(i.e., reversing the role of defensiveness and emotion dysregulation) as well as the possibility that defensiveness would moderate the association between emotion dysregulation and interpersonal problems.

2. Study 1

2.1. Method

2.1.1. Participants and procedures. Participants were 274 individuals dwelling in the community in a large urban center in Italy (125 men, 149 women, all Italians), who volunteered to take part in the study, after providing written informed consent. This sample was recruited by master's level psychology students as part of a laboratory assignment, including people from their social network as well as by posting advertisements in public spaces (e.g., train station, general practitioner offices). Participants' mean age was 36.54 ($SD = 11.81$), with no significant differences across sex, $t(272) = 1.81, p > .10$. The majority of participants in this sample had a high school degree or higher level of education ($N = 247$, 90.1%). Of them, 30 (10.9%) were unemployed, 150 (54.7%) were employees, 23 (8.4%) were freelance professionals, 67 (24.5%) were students, and 4 (1.5%) were retired. All procedures complied with the APA ethical standards in the treatment of human research participants and were approved by a local Institutional Review Board.

2.2. Measures

2.2.1. Emotion dysregulation. Emotion dysregulation was assessed using the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004; Italian adaptation by Giromini, Velotti, de Campora, Bonalume, & Zavattini, 2012). The DERS is a 36-item self-report questionnaire capturing six aspects of emotion regulation difficulties: nonacceptance of emotional responses; inability to engage in goal-directed behavior when distressed; difficulty controlling impulsive reactions under negative emotional arousal; lack of attention for, and awareness of, emotional experiences; limited access to effective emotion

regulation strategies; and lack of emotional clarity. Participants were asked to rate the extent to which each item described them on a Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). An overall score is calculated by summing all the item scores, with higher scores indicating greater emotion dysregulation. Although many studies have used the DERS facet scores, recent studies suggest adequate fit for models in which all six facets load on a higher order dimension of perceived emotion regulation ability (John & Eng, 2014). Consequently, we used DERS total scores in this study. Also consistent with this perspective, the DERS total score demonstrated good internal consistency in this sample (coefficient $\alpha = .90$).

2.2.2. Defensiveness. We measured defensiveness with the Marlowe-Crowne Social Desirability Scale (SDS; Crowne & Marlowe, 1960; Italian adaptation by Saggino & Ronco, 1997), originally developed as a measure of socially desirable responding. The SDS is a 33-item True/False questionnaire derived in part from the Minnesota Multiphasic Personality Inventory (MMPI) items and designed so that neither response could be easily related to psychopathological symptoms. Recent studies suggest that SDS scores reflect both self-deceptive and impression management aspects of defensiveness (Uziel, 2010). Participants rated their agreement or disagreement with each item, with 15 items keyed false (indicating probable but socially desirable experiences), and 18 items keyed true (describing improbable but socially desirable experiences). The higher the score, the greater is the overall level of defensiveness (Lane et al., 1990). In the current sample, the coefficient alpha for Defensiveness scores was .77.

2.2.3. Interpersonal problems. The Inventory of Interpersonal Problems-47 (IIP-47; Pilkonis, Kim, Proietti, & Barkham, 1996; Italian validation: Ubbiali, Chiorri, & Donati, 2011) was used to measure interpersonal problems. The IIP-47 is a self-report questionnaire which consists of five subscales, tapping five dimensions of interpersonal problems related to

personality functioning (with internal consistency coefficients for the current sample listed in parentheses): Interpersonal Sensitivity ($\alpha = .80$); Interpersonal Ambivalence ($\alpha = .79$); Aggression ($\alpha = .88$); Need for Social Approval ($\alpha = .82$); and Lack of Sociability ($\alpha = .80$). Twenty-five items ask respondents to indicate things that they find “hard to do”, whereas 22 items regard things that one “does too much.” Answers are rated on a Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). On each dimension, higher scores correspond to greater interpersonal problems in that domain. Prior research has suggested that scores on the Interpersonal Sensitivity, Need for Social Approval and Lack of Sociability scales of the IIP-47 are related to internalizing symptoms in interpersonal interactions, whereas scores on the Interpersonal Ambivalence and Aggression scales load are associated with externalizing symptoms (Stern, Kim, Trull, Scarpa, & Pilkonis, 2000).

2.3. Results

Table 1 shows means, standard deviations, and bivariate correlations among all study variables. Correlations revealed that DERS total scores were negatively related to defensiveness (i.e., SDS) total scores. Higher levels of defensiveness were associated with fewer self-reported difficulties in emotion regulation. Likewise, significant negative associations emerged between scores on each domain of interpersonal problems (i.e., IIP-47 subscales) and defensiveness scores: higher levels of defensiveness corresponded with lower levels of self-reported interpersonal problems. Conversely, DERS scores were positively related with scores on all five IIP-47 scales. As a whole, correlations corroborated the expected bivariate associations between emotion dysregulation, defensiveness, and interpersonal problems.

[Insert Table 1 about here]

To examine whether defensiveness accounted for a significant proportion of the variance shared between emotion dysregulation dimensions and interpersonal problems, we conducted

a path analysis in Mplus 7 (Muthén & Muthén, 2013), to account for relationships with several (interrelated) dependent variables, while limiting alpha inflation. The DERS, SDS, and the IIP-47 subscales were used as observed (single) indicators. To account for measurement error, we fixed the residual variance of each single indicator to $(1 - \text{scale reliability}) * \text{scale variance}$ (where internal consistency alphas were used as reliability values; Hayduk, 1987). To test the significance of indirect effects we employed the bootstrapping method (Hayes, 2009). Bias-corrected 95% confidence intervals (CIs) based on 5,000 samples with replacement were calculated, with the indirect effect estimate considered significant when the 95% CI did not include zero. A graphical depiction of the path analysis results (with path coefficients) is displayed in Figure 1.

[Insert Figure 1]

As shown in Figure 1, DERS scores were negatively related to SDS scores ($R^2 = .28, p < .001$). In turn, SDS scores were negatively related to scores on the interpersonal ambivalence and aggression subscales of the IIP-47. With the SDS in the model, the direct effects of DERS scores were significant and positive for four out of five IIP-47 scales; the exception was the interpersonal ambivalence scale, where the relationship was no longer significant (overall $R^2 = .16, p < .001$). That is, DERS scores remained positively associated with interpersonal sensitivity (overall $R^2 = .45, p < .001$), need for social approval (overall $R^2 = .30, p < .001$), lack of sociability (overall $R^2 = .30, p < .001$), and aggression (overall $R^2 = .30, p < .001$).

Inspection of indirect effect coefficients yielded evidence of atemporal mediation for two of five IIP dimensions. Results suggest that SDS partially mediated the relation between DERS and aggression (standardized $ab = .26$, 95% CI [.17, .35], $R^2 = .41$). Moreover, SDS scores fully mediated the relation between DERS and interpersonal ambivalence scores (standardized $ab = .22$, 95% CI [.13, .32], $R^2 = .25$), as indicated by the small and

nonsignificant direct relationship between DERS and Interpersonal Ambivalence with SDS scores in the model ($\beta = .13, p > .10$).

2.4. Supplementary Analyses

To further examine the possible impact of individual differences in defensiveness on self-reported emotion dysregulation and interpersonal problems, we repeated mediation analyses by inverting the roles of emotion dysregulation and defensiveness. Due to the cross-sectional design of the study, this is not meant to imply a different causal or temporal ordering of these variables. Rather, we did so to test from another perspective the competing hypothesis that emotion dysregulation could account for the relationship between defensiveness and interpersonal difficulties. Indeed, if defensiveness partly reflects self-control and positive social adjustment (Uziel, 2010), its negative relation to interpersonal problems should be mediated by emotion dysregulation – that is, a form of low self-control.

As expected from the zero-order correlations reported above, results of this path analysis revealed that SDS scores were negatively related to DERS scores ($\beta = -.53, p < .001, R^2 = .28$). In turn, DERS scores were positively related to scores on four out of five IIP-47 scales, namely: interpersonal sensitivity ($\beta = .61, p < .001, R^2 = .45$), aggression ($\beta = .22, p < .05, R^2 = .41$), need for social approval ($\beta = .61, p < .001, R^2 = .30$), and lack of sociability ($\beta = .50, p < .001, R^2 = .30$). With the DERS in the model as mediator, the negative direct effects of SDS scores were significant and negative for two of the five IIP-47 scales, namely: interpersonal ambivalence ($\beta = -.47, p < .001, R^2 = .25$), and aggression ($\beta = -.50, p < .001$). Inspection of indirect effect coefficients yielded evidence of atemporal mediation for four of five IIP-47 dimensions. Results suggest that DERS partially mediated the relation between SDS and interpersonal sensitivity (standardized $ab = -.33$, 95% CI $[-.05, -.03]$), aggression (standardized $ab = -.12$, 95% CI $[-.03, -.01]$), need for social approval (standardized $ab = -.32$, 95% CI $[-.06, -.03]$), and lack of sociability (standardized $ab = -.26$, 95% CI $[-.06, -.03]$).

Finally, we tested the possibility that SDS would moderate relationships between DERS and interpersonal problems. This allowed us to further elucidate the mechanisms linking emotion dysregulation, defensiveness, and interpersonal problems. For the sake of transparency, we clarify that these analyses were exploratory in nature. Moderation analyses were conducted using a bootstrap approach implemented in the PROCESS Macro for SPSS (Hayes, 2013). Five models were tested including one IIP-47 scale score at a time as the dependent variable. Only in one case did the interaction term explain incremental variance in the dependent variable, above and beyond the main effects of SDS and DERS (due to space considerations, non-significant results are not reported, but are available from the first author upon request). Specifically, the $\text{SDS} \times \text{DERS}$ interaction explained a significant amount of incremental variance (roughly 2%) in need for social approval ($B = .001$, $SE = .0004$, $R^2_{\text{change}} = .02$, $p < .01$). Simple slopes analyses to probe the interaction effect revealed that the positive relation between reported emotion dysregulation and need for social approval was greater at higher levels of defensiveness than at lower levels of defensiveness, although it remained significant at low ($B = .019$, $SE = .003$, $p < .001$), medium ($B = .025$, $SE = .003$, $p < .001$), and high levels of defensiveness ($B = .031$, $SE = .004$, $p < .001$).

2.5. Interim Summary and Discussion

In short, findings from Study 1 can be summarized in a few main results concerning the role of defensiveness in the association between emotion dysregulation and interpersonal problems. First, reports of poorer emotion regulation were associated with reports of greater interpersonal sensitivity, need for social approval, and lack of sociability, and these relationships were not altered by including defensiveness in the model as a mediating variable. In contrast, the positive associations between emotion dysregulation and both interpersonal ambivalence and aggression were significantly reduced by including individual

differences in defensiveness, corroborating the hypothesis that defensiveness captures substantive variance in specific forms of interpersonal difficulty.

These findings can be understood by considering prior research on the IIP subscales. Specifically, interpersonal sensitivity, need for social approval, and lack of sociability share features such as vulnerability to subjective distress (i.e., being too susceptible to criticism, relying on other to validate one's own experience, or feeling socially inadequate). In contrast, interpersonal ambivalence and aggression – at least as assessed in the IIP-47 – share a hostile and antagonistic attitude toward others, frequently related to action tendencies like blaming or attacking others (Pilkonis et al., 1996; Stern et al., 2000). In our sample, individuals reporting fewer emotion dysregulation problems were more likely to report higher levels of defensiveness, which in turn was associated with reports of less interpersonal ambivalence and aggression. These results suggest the possibility that defensiveness may not account for relationships between emotion dysregulation and interpersonal problems that share a prominent internalizing component (i.e., interpersonal sensitivity, need for social approval, and lack of sociability; Stern et al., 2000). In contrast, given relationships between IIP ambivalence and hostility (Stern et al., 2000), these findings suggest that higher levels of defensiveness partly explain the mechanisms linking emotion dysregulation and interpersonal problems in the externalizing domain (i.e., interpersonal ambivalence and aggression; Krueger et al., 2002).

Second, testing of the reversed mediation models revealed that the effect of defensiveness on four of the five IIP-47 scales (interpersonal sensitivity, aggression, need for social approval, and lack of sociability) could also be explained by individual differences in levels of emotion dysregulation. These findings are consistent with the argument that high levels of defensiveness may be associated with high levels of self-control (Uziel, 2010) – and by extension emotion regulation – which in turn may explain the negative associations between

defensiveness and interpersonal problems. Of note, this argument makes sense only if we can assume that self-reported emotion regulation skills – at least as assessed with the DERS – primarily reflect true ability in emotion regulation. Conversely, it could also be argued that the tendency to report less problems in emotion dysregulation shares substantial variance with reduced awareness and reporting of socially undesirable behavior, and that this shared variance accounts for much of the negative relationship between defensiveness and reports of interpersonal problems.

Finally, moderation analyses suggest that the indirect effects observed for ambivalence and aggression are not better explained by moderation than by mediation. Indeed, only one of the five models yielded evidence of moderation, and there was no evidence that the relationships between ambivalence (or aggression) and emotion regulation depended on participants' level of defensiveness. Rather, the only evidence for moderation was with respect to the relationship between emotion dysregulation and need for social approval. Nonetheless, the finding that this association was stronger at high levels of defensiveness suggests that, at least in this sample, higher levels of social desirability were not an indication of psychological health. Among participants high in defensiveness, self-reported difficulties in emotion regulation were associated with greater need for social approval, which seems more consistent with the conceptualization of defensiveness as maladaptive – at least to the extent that it can increase levels of need for social approval among individuals with problems in regulating emotions.

3. Study 2

In light of the findings obtained in Study 1 – which suggested that defensiveness plays a role in the association between emotion dysregulation and interpersonal problems in the externalizing domain, the aim of Study 2 was to examine whether these findings could be extended to a sample characterized by more severe forms of maladaptive behavior. Indeed,

findings concerning externalizing traits may be important in applied settings, such as forensic research and practice. Therefore, we examined some of the same issues as in Study 1 in an offender sample. In this sample, information was available about emotion regulation, defensiveness, and one specific interpersonal problem, aggression. Therefore, we examined whether individual differences in defensiveness explained some of the shared variance between emotion dysregulation and the specific interpersonal problem of aggression. In line with Study 1 findings, we expected that defensiveness would account for an indirect relationship between emotion dysregulation and aggression. Furthermore, in relation to the supplementary analyses presented in Study 1, we expected: that the reversed model of an indirect relationship between defensiveness and aggression through emotion dysregulation would also be significant; and that defensiveness and emotion dysregulation would not interact in predicting aggression.

3.1. Method

3.1.1. Participants and procedures. The sample consisted of 268 male offenders serving sentences in North Italian prisons. Inmates were recruited by master's level psychology students as part of their dissertation research with the help of prison educators who selected potential participants based on the following criteria: age between 18 and 65; fluent in Italian; convicted of a violent crime. Their mean age was 37.36 ($SD = 13.91$). Although the largest group of participants ($N = 121$, 45.1%) had been born in Italy, there were also participants originally from African countries ($N = 60$, 22.4%), Eastern European countries ($N = 51$, 19%), South American countries ($N = 29$, 11%), Western European countries ($N = 2$, 0.7%), and Northern European countries ($N = 1$, 0.4%). Four inmates did not disclose their country of origin. All procedures complied with the APA ethical standards in the treatment of human research participants, and were approved by a local Institutional Review Board, as well as by the Italian Ministry of Justice.

3.2. Measures

3.2.1. Emotion dysregulation. As in Study 1, the DERS (Gratz & Roemer, 2004; Italian adaptation by Giromini et al., 2012) was used to measure emotion dysregulation. Also in this sample, the DERS total score demonstrated good internal consistency ($\alpha = .88$).

3.2.2. Defensiveness. As in Study 1, we measured defensiveness with the SDS (Crowne & Marlowe, 1960; Italian adaptation by Saggino & Ronco, 1997). In the current sample, the alpha coefficient for Defensiveness scores was .73.

3.2.3. Aggression. In this sample, trait aggression was measured using the Aggression Questionnaire (AQ; Buss & Perry, 1992). The AQ is a 29-item self-report measure of four dimensions of aggression: physical aggression, verbal aggression, anger, and hostility. Items are rated on a Likert scale ranging from 1 (*extremely uncharacteristic of me*) to 5 (*extremely characteristic of me*). The AQ total score represents an index of trait aggression ($\alpha = .88$). The Italian version of the AQ has shown good reliability and validity (Fossati, Maffei, Acquarini, & Di Ceglie, 2003).

3.3. Results

Table 1 shows means, standard deviations, and bivariate correlations among all study variables. Correlation results revealed that, among offenders, reports of greater emotion dysregulation (i.e., higher DERS total scores) were negatively related to defensiveness (i.e., SDS total scores). Higher levels of defensiveness were associated with fewer self-reported difficulties in emotion regulation. Further, self-reported aggression (i.e., AQ total score) was negatively related to defensiveness. Conversely, DERS scores were positively related with aggression scores. As a whole, correlations corroborated the bivariate associations between emotion dysregulation and aggression, as would be expected based on prior studies and based on findings from Study 1.

To examine whether defensiveness accounted for a significant proportion of the variance shared between emotion dysregulation dimensions and aggression, we again conducted a path analysis, and the significance of indirect effects was tested with bias-corrected 95% CIs based on 5,000 samples with replacement. The DERS, SDS, and AQ total scores were used as observed (single) indicators. To account for measurement error, we fixed the residual variance of each single indicator to $(1 - \text{scale reliability}) * \text{scale variance}$ (where internal consistency alphas were used as reliability values; Hayduk, 1987). A graphical depiction of path analysis results is displayed in Figure 2.

[Insert Figure 2]

As shown in Figure 2, DERS scores were negatively correlated with SDS scores. In turn, SDS scores were negatively correlated with AQ scores. However, the direct (positive) effect of the DERS on AQ was significant. The indirect path linking DERS and AQ through the SDS was significant (standardized $ab = .24$, 95% CI [.16, .32], $R^2 = .47$), providing evidence, in conjunction with the significant direct path, for partial atemporal mediation.

3.4. Testing Alternative Hypotheses

As in Study 1, we repeated mediation analyses by reversing the roles of emotion dysregulation and defensiveness, to further examine the mechanisms linking defensiveness, emotion dysregulation and interpersonal problems. In line with Study 1 results, this path analysis revealed that SDS scores were negatively related to DERS scores ($\beta = -.42$, $p < .001$, $R^2 = .17$). In turn, DERS scores were positively related to aggression scores ($\beta = .21$, $p < .01$, $R^2 = .47$). With the DERS in the model as mediator, the negative direct effects of SDS scores on aggression remained significant ($\beta = -.57$, $p < .001$). Inspection of indirect effect coefficients yielded evidence that DERS scores partially mediated the relation between SDS and aggression (standardized $ab = -.09$, 95% CI [-.14, -.04]). Finally, we tested the possibility

that SDS scores would moderate relationships between DERS and aggression. As in Study 1, the interaction term was not significant, $R^2_{change} = .001$, $F = .25$, $p > .50$.

2.5. Interim summary and discussion

Findings of Study 2 were strikingly consistent with those of Study 1 concerning aggression. Indeed, we replicated results obtained in the community sample, finding that defensiveness significantly explained a part of the shared variance linking emotion dysregulation and aggression. Further, the reversed model was also consistent with Study 1 findings, in that emotion dysregulation partly mediated the link between defensiveness and aggression. Finally, no significant moderation effect occurred. Taken together, these findings appear to suggest that: 1) offenders reporting lower levels of emotion dysregulation also reported higher levels of defensiveness, which in turn were associated with lower levels of aggression; 2) defensiveness seems to capture substantive variance in the relationship between emotion dysregulation and aggression; and 3) this substantive variance may be partly related to individual differences in self-control, because high defensiveness was also indirectly related to greater levels of aggression through its relationship with high emotion dysregulation.

4. General Discussion

The positive associations between difficulties in emotion regulation and problems in the interpersonal domain – and aggression in particular – are well established. We replicated these associations in a community sample and in an incarcerated offender sample. The current study extends our understanding of these relationships by demonstrating that individual differences in defensiveness are positively related to individual differences in emotion dysregulation and in interpersonal functioning. Moreover, cross-sectional mediation analyses revealed that individual differences in defensiveness explained a portion of the positive associations that emotion dysregulation had with interpersonal ambivalence and

aggression in the community sample. Further, the role of defensiveness in accounting for the positive relation between emotion dysregulation and aggression was replicated in the offender sample.

First, the negative association at the zero-order level between defensiveness and the Need for social approval scale of the IIP-47 seems to suggest that SDS-assessed social desirability does not represent a need to obtain approval and favor from others (e.g., Millham & Kellog, 1980). On the contrary, those individuals characterized by low levels of defensiveness (i.e., those who more readily acknowledge unfavorable self-attributes) were more willing to acknowledge that they seek approval from their environment more readily than individuals with high levels of defensiveness. Conversely, those individuals characterized by high levels of defensiveness report less concern about others' judgment; they appear to present lower levels of this specific form of interpersonal problems, and thus might be viewed as having a more stable (or at least less dependent on others' approval) representation of themselves.

The consistency of the direct associations (controlling for levels of defensiveness) between the DERS and four of five kinds of interpersonal problems examined in Study 1, as well as between the DERS and aggression in Study 2, indicates that a significant portion of the variance in interpersonal problems and aggression is uniquely accounted for by individual differences in self-reported emotion regulation ability, after removing the effects of defensiveness. Such findings provide additional evidence that not all of the relationships between reported emotion dysregulation and interpersonal difficulties can be attributed to defensiveness. Self-report measures of emotion regulation continue to provide valuable information relevant for predicting interpersonal adjustment even after controlling for individual differences in willingness to acknowledge or report difficulties. The only exception concerned the interpersonal ambivalence scale, whose association with the DERS dropped to non-significance in the model that included defensiveness. **The findings of Study**

1 also suggest the possibility that the relationships between interpersonal ambivalence and emotion dysregulation may be especially influenced by individual differences in defensiveness. Further study of this relationship appears warranted.

Defensiveness was negatively related to indices of emotion dysregulation, interpersonal problems, and aggression. However, in the models that also included the DERS scores, defensiveness had significant associations only with interpersonal ambivalence (in Study 1) and aggression (in Study 2). Of note, these two forms of interpersonal problems share a (likely common) externalizing component (Krueger et al., 2002). Indeed, prior research has shown that the Interpersonal ambivalence and Aggression scales of the IIP-47 load on the same underlying dimension related to externalizing symptoms (Stern et al., 2000). The negative associations between defensiveness and both emotion dysregulation and interpersonal problems in the externalizing domain may reflect that individuals who tend not to acknowledge negative aspects of the self might also be especially likely to underreport problems in multiple components of emotion regulation and to recognize some of their maladaptive attitudes in relational contexts. An alternative explanation is that high levels of defensiveness capture high self-control and a proneness to follow social norms and expectations (Diener et al., 1991; Verschuere et al., 2014). From this perspective, it could be that individuals who are defensive are likely to comply with social conventions, displaying healthy interpersonal behavior and coping effectively with their emotional responses. Conversely, those who tend to disregard social norms and expectations (i.e., low levels of defensiveness) would also be more likely to engage in externalizing behavior (aggression) and manifest attitudes (interpersonal ambivalence, hostility) that contribute to troubles with emotion regulation.

Regarding our main hypothesis, in Study 1 we observed significant indirect effects of emotion dysregulation through defensiveness for the externalizing domains of interpersonal

problems mentioned above: interpersonal ambivalence and aggression. In line with prior studies (e.g., Verschuere et al., 2014), the inclusion of defensiveness in the model weakened the associations that emotion dysregulation had with interpersonal ambivalence and aggression. Of note, this finding replicated in an offender sample likely characterized by more severe forms of aggressive tendencies (Study 2). In conjunction with prior evidence that defensiveness reflects substantive variance in personality rather than variance in response styles (Chung, 2012; Kurtz et al., 2008; Widiger & Oltmanns, 2016), this result seems consistent with the argument that defensiveness may reflect true variance in self-reported emotion dysregulation, interpersonal problems, and aggression, rather than representing a response bias that produces statistical noise. These findings suggest atemporal mediation (Winer et al., 2016), which raises the possibility that some findings on the DERS are either explained by individual differences in self-knowledge, or explained by individual differences in self-control (Mackinnon et al., 2000).

Due to the cross-sectional and correlational nature of our data, we cannot draw interpretations regarding possible causation or temporal sequences, an inevitable limitation of demonstrations of atemporal mediation (Winer et al., 2016). Nevertheless, these findings demonstrate that individual differences in defensiveness account for a substantial portion of the variance shared between emotion dysregulation and some interpersonal problems. This means that the some of the reported positive associations between emotion dysregulation and selected domains of interpersonal problems in the empirical literature may actually reflect the underlying impact of variability in levels of defensiveness that is often unexamined. **More concretely, results suggest that people who report higher levels of emotion dysregulation may also be more likely to report lower levels of defensiveness, and in turn to report higher levels of interpersonal problems related to aggression and ambivalence. In contrast, individuals who tend to report lower levels of emotion regulation may also be more likely to report higher**

levels of defensiveness, which in turn is associated with lower levels of interpersonal ambivalence and aggression.

Although the present study does not provide direct evidence of the extent to which individuals were experiencing such difficulties but unaware of these problems, these findings could be consistent with other evidence suggesting that defensive individuals may fail to perceive and about their own negative attributes, at least under a variety of conditions (Mesmer-Magnus et al., 2006; Uziel, 2010; Weinberg et al., 1979). This could suggest the possibility that self-report measures of emotion regulation, interpersonal problems, and aggression might fail to detect some of the impact of problems in emotion regulation and in interpersonal impairment for individuals with high levels of defensiveness.

As discussed above, it remains possible to argue that these negative relationships could also indicate that defensiveness may have some impacts that are adaptive in the sense that defensiveness may provide a relatively healthy method for dealing with negative emotions or difficult interpersonal experiences (Lane et al., 1990). That is, these findings might also be consistent with the possibility that low levels of defensiveness actually reflect low self-control and a tendency to unconventionality. Such tendency could be related to externalizing behavior such as interpersonal ambivalence and aggression, emotion dysregulation, and partly explain their associations (Verschuere et al., 2014). Understanding whether this approach could be valid in some cases, or whether these two perspectives may coexist, could be of crucial relevance, particularly with regard to the self-report assessment of emotion dysregulation, interpersonal problems, and aggression. Although more studies are needed to cast light on this issue, and although defensiveness might be beneficial in specific circumstances (e.g., to resist fatigue or discouragement during periods of pressure, or to self-promote one's ability during a job interview), the possibility that defensiveness has long-term positive effects on well-being has not received sufficient scrutiny to warrant firm statements

about the conditions under which defensiveness is maladaptive versus adaptive. Interestingly, most studies pointing to the maladaptive effects of defensiveness investigated physiological and general health indices (e.g., Movius & Allen, 2005, Nyklicek et al., 1998; Rutledge et al., 2000), whereas most studies supporting its adaptive functions investigated personality traits (e.g., Kurtz et al., 2008) or studied individual differences in impression management rather than self-deceptive defensiveness (Uziel, 2010). Therefore, one scenario in which it could be plausible that these two perspectives may coexist is that defensiveness may have a positive association with personality traits and social behavior while being associated with poor health outcomes (e.g., hypertension).

By relying exclusively on self-report measures, the present study design did not allow to place our findings as supportive of neither the adaptive (i.e., self-control) nor the maladaptive (i.e., weak self-knowledge) views of defensiveness. Nonetheless, our supplementary analyses can give rise to some speculation. Indeed, findings that the negative relations between defensiveness and interpersonal problems (with the only exception of interpersonal ambivalence, in Study 1) was significantly accounted for by levels of emotion dysregulation seems consistent with the possibility that defensiveness reflects high levels of self-control. Conversely, if defensiveness was capturing a general weakness in self-knowledge, its relations to both emotion dysregulation and interpersonal problems could have been independent from each other. If this set of findings seems more consistent with the self-control – adaptive – perspective, moderation analyses appeared to suggest that defensiveness was rather maladaptive, in that at high levels of defensiveness, the relation between emotion dysregulation and need for social approval was strengthened. However, it should be noted that moderation analyses provided less consistent evidence compared to mediation analyses. Indeed, only one out of six effects was significant, it did not alter the sign or the significance

of associations (but only the strength), and accounted for a relatively small amount of variance in need for social approval.

In short, across the two studies, our findings can be summarized in three main take-home messages. First, our findings suggest that lower endorsements of emotion dysregulation, interpersonal ambivalence, and aggression may reflect individual differences in defensiveness. That is, if an individual has high levels of defensiveness, assessments that rely on self-report will tend to yield lower levels of emotion dysregulation, interpersonal problems and aggression. Second, it is worth noting that defensiveness did not mediate relations between emotion dysregulation and some IIP-47 scales, namely: interpersonal sensitivity, need for social approval, and lack of sociability. Rather, defensiveness moderated the relation between emotion dysregulation and need for social approval. As opposed to interpersonal ambivalence and aggression, these three forms of interpersonal problems seem to share a more internalizing component (e.g., feelings of insecurity and social exclusion). Taken together, these findings seem to indicate that the role of defensiveness in impacting associations between self-report measures may vary in relation to specific constructs (e.g., internalizing versus externalizing). Third, our findings provide additional evidence for the validity of self-report assessment of emotion dysregulation, at least as operationalized by the DERS. Indeed, the DERS was quite resistant to the influence of defensiveness in predicting scores on interpersonal problems and aggression in both community and offender samples, the latter being considered more likely to provide social desirable responses to self-report assessment (Verschuere et al., 2014).

Some limitations to the present study warrant mention. First, our reliance on self-report questionnaires may have inflated the strength of some associations considered due to a common-method bias. Second, we used a single-scale measure of defensiveness, preventing us from distinguishing between different aspects of this construct (e.g., self-deceptive

enhancement or impression management). Third, a more informative and comprehensive assessment of the nature of defensiveness could be obtained by combining self- and informant-report, or adopting more naturalistic assessment methods. Future studies including a multi-method assessment of the constructs examined are necessary to support the relevance of our findings.

Overall, our findings join accumulating evidence suggesting that time has come to further investigate the forms and functions of defensiveness as an individual difference variable which deserves its own place when examining mechanisms linking personality traits, and which makes an important contribution to the relationships we observe between emotion regulation and interpersonal problems across different populations, especially in the externalizing domain.

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Table 1

Means, standard deviations (SD) and correlations among emotion dysregulation dimensions, defensiveness, interpersonal problems (total N = 542).

	Sample 1 Mean (SD)	Sample 2 Mean (SD)	1.	2.	3.	4.	5.	6.	7.	8.
<i>Emotion dysregulation</i>										
1. DERS total score	80.09 (14.27)	81.54 (20.04)	—	-.43***	.60***	.27***	.42***	.49***	.45***	
<i>Defensiveness</i>										
2. SDS total score	16.38 (5.22)	17.46 (4.91)	-.33***	—	-.33***	-.38***	-.50***	-.15*	-.27***	
<i>Interpersonal problems (IIP-47)</i>										
3. Interpersonal sensitivity	1.42 (0.58)				—	.36***	.57***	.70***	.62***	
4. Interpersonal ambivalence	1.32 (0.59)					—	.50***	.20**	.40***	
5. Aggression	0.95 (0.74)						—	.22***	.31***	
6. Need for social approval	1.61 (0.65)							—	.60***	
7. Lack of sociability	1.22 (0.80)								—	
<i>Aggression</i>										
8. AQ total score		85.32 (18.83)	.40***	-.53***						—

Note. The Inventory of Interpersonal Problems (IIP-47) was used in Study 1, and the Aggression Questionnaire (AQ) was used in Study 2. Correlations above the diagonal summarize relationships in community participants (Study 1, $N = 274$), and correlations below the diagonal summarize relationships in the offender sample (Study 2, $N = 268$). DERS = Difficulties in Emotion Regulation Scale. SDS = Marlowe-Crowne Social Desirability Scale.

* $p < .05$. ** $p < .01$. *** $p < .001$.

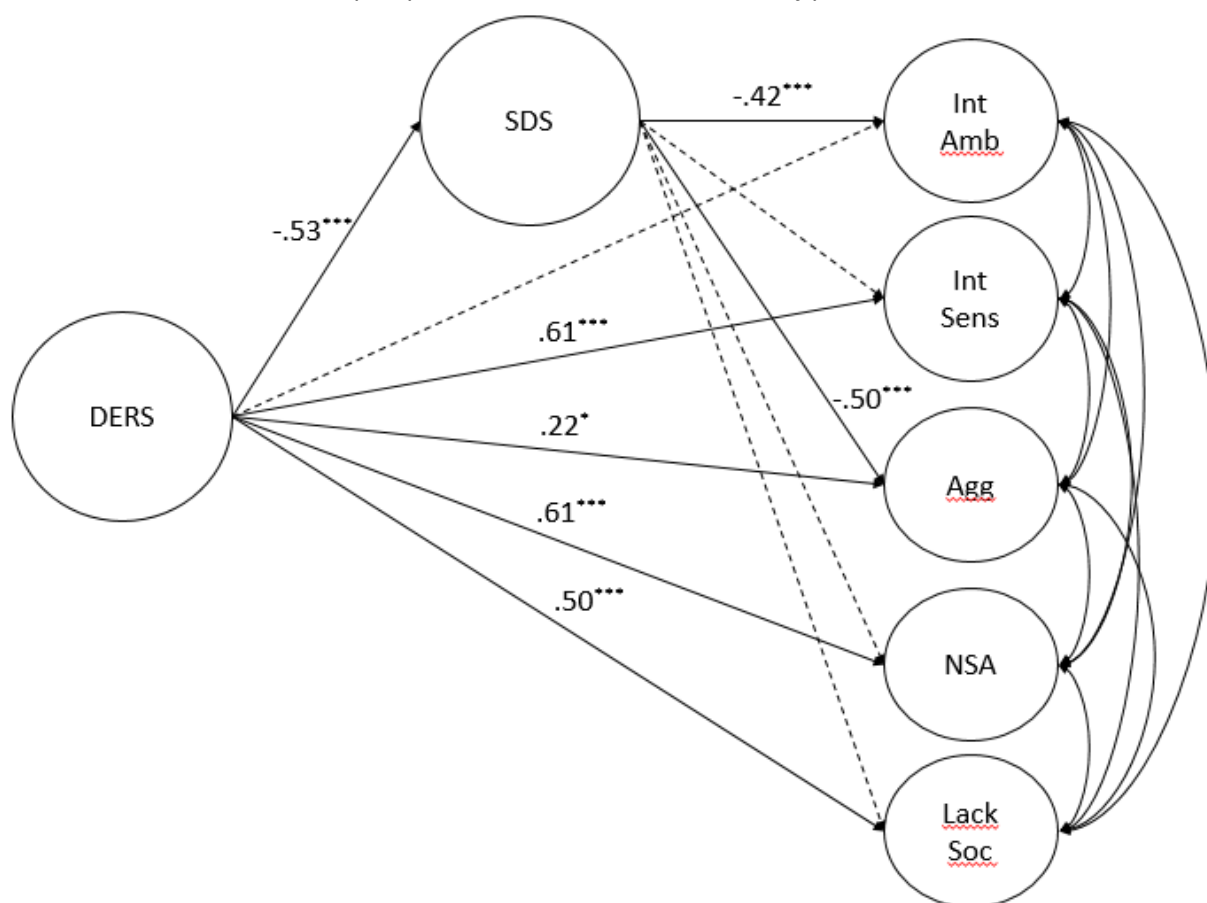


Figure 1. Graphical depiction with standardized path coefficients for the path analysis in the community sample (Sample 1; $N = 274$). For ease of readability, only significant coefficients are reported, and correlation coefficients among IIP-47 scales are not displayed (see Table 1). DERS = Difficulties in Emotion Regulation Scale. SDS = Marlowe-Crowne Social Desirability Scale. Int Amb = Interpersonal Ambivalence scale of the Inventory of Interpersonal Problems-47 (IIP-47). Int Sens = Interpersonal sensitivity scale of the IIP-47. Agg = Aggression scale of the IIP-47. NSA = Need for Social Approval Scale of the IIP-47. Lack Soc = Lack of Sociability scale of the IIP-47. Total effects (β s) of DERS on IIP-47 scales were: .27 (for Int Amb, $R^2 = .07$), .60 (for Int Sens, $R^2 = .36$), .42 (for Agg, $R^2 = .18$), .49 (for NSA, $R^2 = .24$), .45 (for Lack Soc, $R^2 = .20$), all $ps < .001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

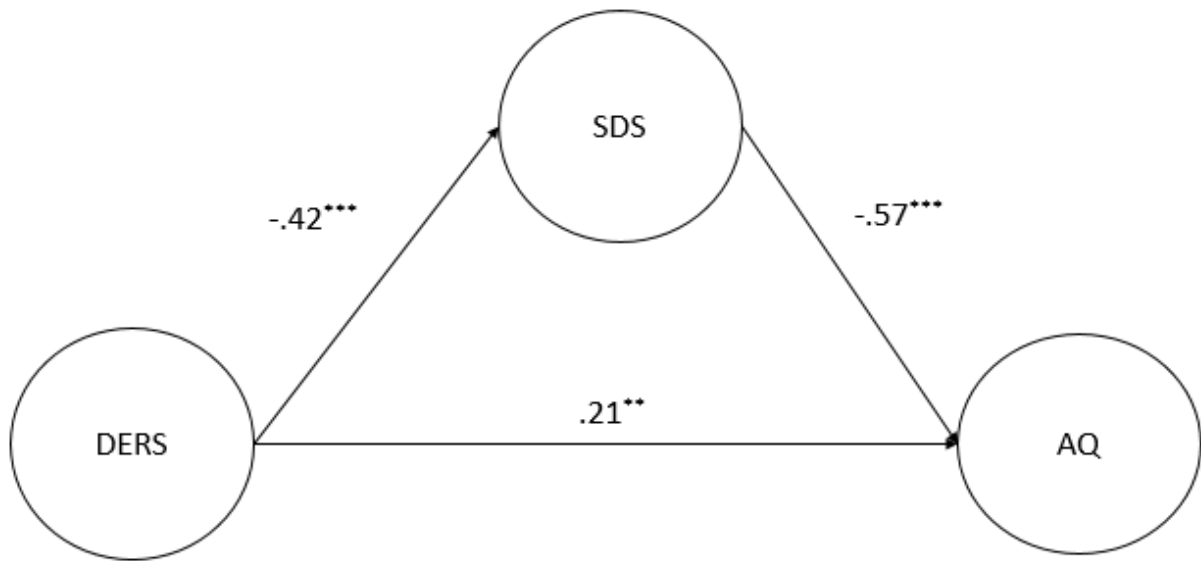


Figure 2. Graphical depiction with standardized path coefficients for the path analysis in the offender sample (Sample 2; $N = 268$). DERS = Difficulties in Emotion Regulation Scale. SDS = Marlowe-Crowne Social Desirability Scale. AQ = Aggression Questionnaire. The total effect of DERS on AQ (not reported in the figure) was $\beta = .38$, $p < .001$, $R^2 = .14$, $p < .001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.